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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------|-------------|----------------------|---------------------|------------------|
| 10/540,918 | 07/21/2005 | Bergamasco-Massimo | 05085 | 3326 |
| 23338 | 7590 | 07/26/2007 | EXAMINER | |
| DENNISON, SCHULTZ & MACDONALD | | | NOLAND, THOMAS | |
| 1727 KING STREET | | | ART UNIT | PAPER NUMBER |
| SUITE 105 | | | 2856 | |
| ALEXANDRIA, VA 22314 | | | | |

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|------------|---------------|
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) |
|------------------------------|------------------------|---------------------|
| | 10/540,918 | MASSIMO ET AL. |
| Examiner | Art Unit | |
| Thomas P. Noland | 2856 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 21 July 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-13 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 29 June 2005 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a))

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
5) Notice of Informal Patent Application
6) Other: _____

1. The preliminary amendment filed June 29, 2005 has been entered.
2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
3. The disclosure is objected to because of the following informalities: on page 4, line 23 and page 5, line 26 " an user " should be replaced with - - - a user - - -. Appropriate correction is required.
4. Claim 1 is objected to because of the following informalities: in line 2 " an user " should be replaced with - - - a user - - -. Appropriate correction is required.
5. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 5 for consistency " an operator " should apparently be replaced with - - -the user - - -. In claim 2, line 3 after " or " - - - a - - - should be inserted. In claim 3, line 4 " an operator " should be replaced with - - - the user - - -. In line 5 " joint " should be replaced with - - - joints - - -. In claim 4, line 3 " the fifth rigid link " has no proper antecedent basis. The limitation in line 4 " for example a ring bearing, " should be deleted or positively claimed for clarity. In claim 5, line 2 " said " should be replaced with - - - the - - - and " the " should be deleted. In line 3 " the movement " should be replaced with - - - movement - - -. In claim 6, line 2 " said means for generating said " should be replaced with - - - the means for generating - - -. In line 3 " , in particular "torque motors", " should be positively claimed or deleted for clarity. In claim 7, lines 3-4 " of said " should be replaced with - - - of the - - -. In claim 8, line 3 after " whereby " - - - the means for generating a force comprises a plurality of means therefore, wherein - - - has been inserted. In line 4 " said " should be deleted. In claim 10, line 2 after " transmitting " - - - force - - - should apparently be inserted. There is no antecedent for " said means for orienting " in line 3. In claim 11, line 3 " structure " should be replaced with - - - interface apparatus - - -. In lines 3-4 " in particular said third rotational joint has open geometry " should be positively recited or deleted. In claim 12, line 2 " the axis " should be replaced with - - - each rotational axis - - -. In claim 13, line 3 " are mounted

directly on the " should be replaced with - - - comprise a plurality of means therefore corresponding to each of the plurality of rotational joints with each of the plurality of means therefore mounted directly on an - - - should be inserted. In line 4 " said means " should be replaced with - - - the means - - - and " said force " should be replaced with - - force - - - . In lines 4-6 " in particular . . . incremental encoders " should be positively claimed or deleted for clarity.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by M. Bergamasco et al, NPL publication cited as Ref. U on the form PTO-892.

Note abstract, Figs. 1-2 and page 1450 beginning in the paragraph numbered 3. under the heading " 2 SYSTEMS FOR THE REPLICATION OF EXTERNAL FORCES " – page 1451. (Note pages 1449 and 1450 would not copy properly from Internet source so page 1450 in the attached copy is the 3rd-5th page of the copy.)

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bergamasco et al in view of Kim et al US 6,301,526.

Bergamasco et al shows an exoskeleton interface apparatus substantially as claimed but does not disclose the use of a braking force as claimed. However it would have been obvious to have included such a capability in better to control the response to limb movement for instance to change direction from an initial motion and in view of the disclosure of the use of such means in the similar type interface apparatus of Kim et al, especially in the abstract, Fig. 1 and col. 4, lines 1-7.

11. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergamasco et al in view of Rosen et al, NPL publication cited as Ref. W on the form PTO-892.

Bergamasco et al shows an exoskeleton interface apparatus substantially as claimed but does not disclose the use of torque motor with a high torque/mass ratio or the use of high resolution shaft encoders to measure angular position. However both of these would have been obvious expedients to enhance operation in a system similar to that of Bergamasco et al since using a high torque/mass ratio would obviously help reduce the overall weight of the system for a given torque output and such shaft

encoders are of well known utility in getting accurate angle measurements and in view of the teachings of such means in the similar type interface apparatus of Rosen et al, especially in the abstract, Fig. 1 and page 213, col. 1, 1st full paragraph.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references show exoskeleton interface apparatus.

13. Claims 11-12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Noland whose telephone number is (571) 272-2202. The examiner can normally be reached on weekdays from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Hezron E. Williams, can be reached on (571) 272-2208.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 2800 Customer Service at (571) 272-2815.

Thomas P. Noland
Primary Examiner
Art Unit 2856

July 20, 2007

